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| 09/741,634      | 12/19/2000  | John G. Sikonia      | 595.03-US1          | 5633             |

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EXAMINER

CHANG, VICTOR S

ART UNIT

PAPER NUMBER

1771

DATE MAILED: 07/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |   |  |
|------------------------------|--------------------------------------|---|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>09/741,634 | <b>Applicant(s)</b><br>SIKONIA, JOHN G. |  |
|                              | <b>Examiner</b><br>Victor S Chang    | <b>Art Unit</b><br>1771                 |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5,10-15,17,34-36,40 and 41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5,10-15,17,34-36,40 and 41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

### **DETAILED ACTION**

1. The Examiner has carefully considered Applicants' amendments and remarks filed on 5/25/2004 and 1/23/2004. Applicants' amendments to claims 1, 3, 4, 12 and 14, cancellation of claims 8, 37-39 and 42-43 have been entered.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Rejections not maintained are withdrawn.

### ***Drawings***

4. The Examiner repeats (see section 4 of Office action mailed 10/23/2003) that informal drawings filed in this application are acceptable for examination purposes. When the application is allowed, Applicant will be required to submit new formal drawings.

### ***Specification***

5. The disclosure is objected to because of the following informalities:  
  
The Examiner repeats (see section 5 of Office action mailed 10/23/2003) that Applicant's proposed amendment to the specification to expressly indicate that "Volatile components 126 and 146 are not shown in Figures" appears sufficient. However, the proposed amendment lacks a statement as to which page and paragraph is being amended.

Appropriate correction is required.

***Claim Objections***

6. Claim 5 is objected to because of the following informalities:

Please rewrite "polyarylene ether" as --poly(arylene ether)--, so as to clearly recite the monomer unit.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 40 and 41 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

It is noted claims 40 and 41 are added in an amendment filed 5/5/2003, and each recites "inorganic polymer", which appears to be "new matter", because the originally filed specification only recites "inorganic component", and Applicant has not pointed out express or inherent support for "inorganic polymer". Cancellation or correction is requested.

### ***Double Patenting***

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 1-5, 10-14, 35 and 36 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, 4, 6 and 7 of U. S. Patent No. 6, 171, 687. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims 1, 2, 4, 6 and 7 of US '687 read on the claims 1-5, 10-14, 35 and 36 of instant invention, both structurally and compositionally. For example, when both first and second layers are formed of poly(arylene ether), claim 1 of US '687 claims exactly the same subject matter as claim 1 of instant invention.

11. Claim 15 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,171,687 in view of its specification. Although the conflicting claims are not identical, they are not patentably distinct from each other because US '687 expressly teaches that it is know

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art that interconnections generally consist of multiple layers of metallic conductor lines embedded in a low dielectric constant material (column 1, lines 13-15).

**12.** Claim 17 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 3 of U.S. Patent No. 6,171,687 in view of Chen et al. (US 5858869).

The teachings of US '687 are again relied upon as set forth above.

For claim 17, U.S. '687 lacks an express teaching that the metallic conductor lines embedded in a low dielectric constant material comprises aluminum or copper. However, it is noted that Chen's invention is directed to a method for making multilevel electrical interconnections, and Chen expressly teaches in Fig. 4 that metallic lines are typically formed from aluminum or copper layers (column 5, lines 43-45). As such, it would be obvious to one of ordinary skill in the art to use aluminum or copper for forming the metallic lines, motivated by the desire to reduce the electrical resistance.

**13.** Claims 34, 40 and 41 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 3 of U.S. Patent No. 6,171,687 in view of Lau et al. (US 6509415).

The teachings of US '687 are again relied upon as set forth above.

For claims 34, 40 and 41, US '687 lacks a teaching that the nanoporous material of the first layer or second layer comprises an adamantane-based compound. However, it is noted that Lau's invention is directed to a low dielectric constant material (Abstract), which incorporates adamantane as the cage-like structures forming the nanopores (column 1, line 50 to column 2, line 62), so as to obtain less than 3.0 dielectric constant

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to accommodate the decreasing size of the functional elements of integrated circuit (column 3, lines 51-55). As such, in the absence of new and/or unexpected results, it would have been obvious to one of ordinary skill in the art to modify the first layer or second layer of US '687 by incorporating Lau's nanoporous adamantane-based (inorganic) compound, motivated by the desire to obtain a coating with less than 3.0 dielectric constant for forming an integrated circuit with small functional elements.


14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor S Chang whose telephone number is 571-272-1474. The examiner can normally be reached on 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel H Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*VSC*  
Victor S Chang  
Examiner  
Art Unit 1771

7/19/2004

  
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